U.S. Department of Energy

Tomorrow's Energy Today

for Cities and Counties

The Jobs Connection: Energy Use and Local Economic Development

Jobs and business activity are essential elements of a local economy and are often used to measure local economic health. Some local governments have realized the importance of "energy dollars" and how they relate to local economic health.

The economic and employment impacts associated with the purchase of energy represent a potent area of opportunity for local governments. Yet many governments are not aware that energy purchases and use can have far-reaching effects on their communities' economic well-being. Some local governments are learning to better leverage their energy dollars.

In Osage, Iowa, the city Municipal Utilities Department successfully implemented an energy efficiency program in 1975 (see *Energy Efficiency Strengthens Local Economies*, part of this Cities and Counties fact sheet series). The principal beneficiary of the program has been the town's economy. Today, unemployment is half the national average. While most of this country's rural and small-town economies have been struggling in recent years, the Osage economy is getting stronger, and firms are moving to Osage. And several Osage businesses, such as Fox River Mills, are experiencing exemplary growth after participating in the town's energy efficiency program. Fox River Mills has reduced the energy cost of producing a pair of socks, their primary product, by 29% since 1984. The plant, which employed 110 workers in 1984, employs 310 people today.

As John Lessard, president of Fox River Mills (one of the area's largest employers) states, "Energy efficiency improvements have helped to reduce our production costs and have led to business growth. This, in turn, is good for our local economic and employment picture." And, says Pam Schaefer-Smith, president of the

Larson Bristol, LKB Photography

Mr. John Lessard, president of Fox River Mills, has strengthened his company's competitive position and contributed to a healthy job picture through investments in energy efficiency improvements.

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—John Lessard
President
Fox River Mills

Osage Chamber of Commerce, "Our community and business environment has benefited from energy efficiency improvements in terms of local economic health."

Energy use affects economic growth because energy is purchased and used by every part of your community's economy, including producers, distributors, and marketers of goods and services. But the all-encompassing effects of energy use and purchases on your local economy are not always obvious.

The Flow of Energy Dollars

What are energy dollars? The annual energy bill for an entire community—the residential, commercial, industrial, agricultural, and institutional users—represents its energy dollars. In other words, all the money your community spends on energy purchases can be thought of as energy dollars.

Usually, your community's total utility bills (e.g., electric, gas) and petroleum product purchases (e.g., gasoline, fuel oil) represent the huge majority of energy dollars. It can be remarkable and revealing to total a community's energy dollars (see box on this page) and realize what substantial economic power this represents.

But what if the majority of energy dollars leaves your community or state? Haven't you surrendered important economic power—a voice in your community's economic health? The magnitude of energy dollar drain from a local economy can represent a significant leakage of financial resources. And this loss prevents the "economic multiplier" benefit that these energy dollars could generate.

The Economic Multiplier: What Your Dollars Do

The economic multiplier, also known as the multiplier effect, is a measure of how much economic activity can be generated in a community by different combinations of purchasing and investment.

For example, in Osage, a $1.00 purchase of ordinary consumer goods in a local store generates $1.90 of economic activity in the local economy. This occurs as the dollar is respent; the store pays its employees, who purchase more goods, all with the same original dollar. In comparison, petroleum products generate a multiplier of about $1.51; utility services, $1.66; and energy efficiency, $2.23 (see Note on p. 6).

How does the economic multiplier help? It helps by generating more economic activity, which strengthens the local economy. A higher economic multiplier will lead to greater economic vitality because business

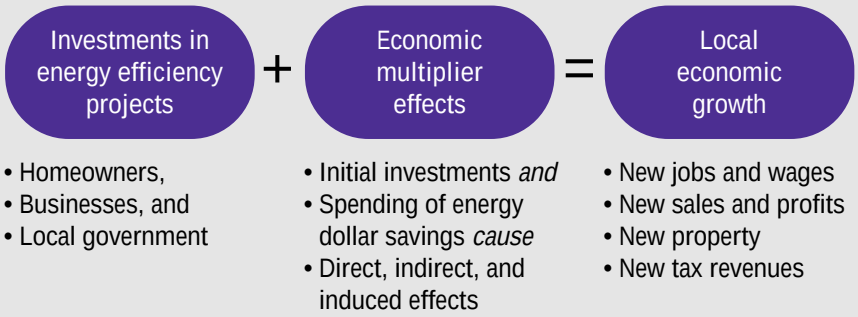
The Lost Potential of Energy Dollars

In many cases, energy dollars leave the community—going to regional utilities or suppliers of oil or natural gas. And once those dollars have been used to import energy into the community or state, they are unlikely to return, and they can't be used to foster additional economic activity. The following local and state governments have made efforts to simply quantify the flow of energy dollars, and, in some cases, quantify the potential economic impacts, resulting in some startling figures.

- The town of Fremont, Nebraska, population 24,000, found in the early 1980s that its annual energy bill was $45 million, of which $36 million (80%) left Fremont.
- During the early 1980s, Wooster, Ohio, spent about $110 million on energy annually. In Wooster, a city of 100,000 people, about 90% of the energy dollars leave the community—this equates to losing a local payroll of about 3000 jobs.
- In 1984, New York City found that its commercial and industrial businesses spent more than $3 billion for energy.
- In 1984, the Nebraska Energy Office estimated that about 80% of every dollar spent on energy leaves the state economy without generating further economic activity.
- In 1990, Iowa imported nearly 97% of its energy at a cost of about $5 billion.
- In 1990, the Missouri Energy Office reported that of the $9.7 billion spent for energy, 92% was imported into the state. More than 70% of these energy dollars left the state to pay for the energy. This leakage equates to $6.8 billion, or more than $1,300 for each Missouri resident.
- Massachusetts imports 97% of its energy. In energy dollars this translated to $11.2 billion in 1992.
- In 1992, the people of Portland, Oregon, spent nearly $715 million in energy dollars.

activity is encouraged, and jobs are created and sustained. Economic growth is enhanced when expenditures with a good economic multiplier are implemented. From the perspective of local government, this policy approach leads to growth in the local tax base and a healthier fiscal picture.

Energy Dollars Impact the Local Economy



Energy efficiency projects designed to minimize the drain of energy dollars from a local economy not only save money, but induce local economic growth.

How Local Economic Growth Occurs

Initial Investments

For many communities, the majority of energy dollars leave the local economy as payments for energy bills and escape local influence. On the other hand, financial investments made locally in energy efficiency and the use of alternative energy technologies (e.g., hydroelectric, cogeneration, biomass, and wind) can be an economically healthy choice. The economic multiplier effect causes several types of economic benefits as a result of initial investments in energy efficiency and alternative energy projects:

Direct Effects. When on-site jobs are created, this is a direct effect. For example, when Fox River Mills installed efficient electric motors in its manufacturing process, direct economic effects were created for the vendor who sold the motors (e.g., accounts receivable) and the contractor who installed the motors (e.g., compensation for services).

Indirect Effects. Additional jobs and economic activity caused by the original event are known as the indirect effect. For example, the vendor who sold the efficient motors can now pay others who provide business support services, such as clerical and accounting staff, or wholesale suppliers.

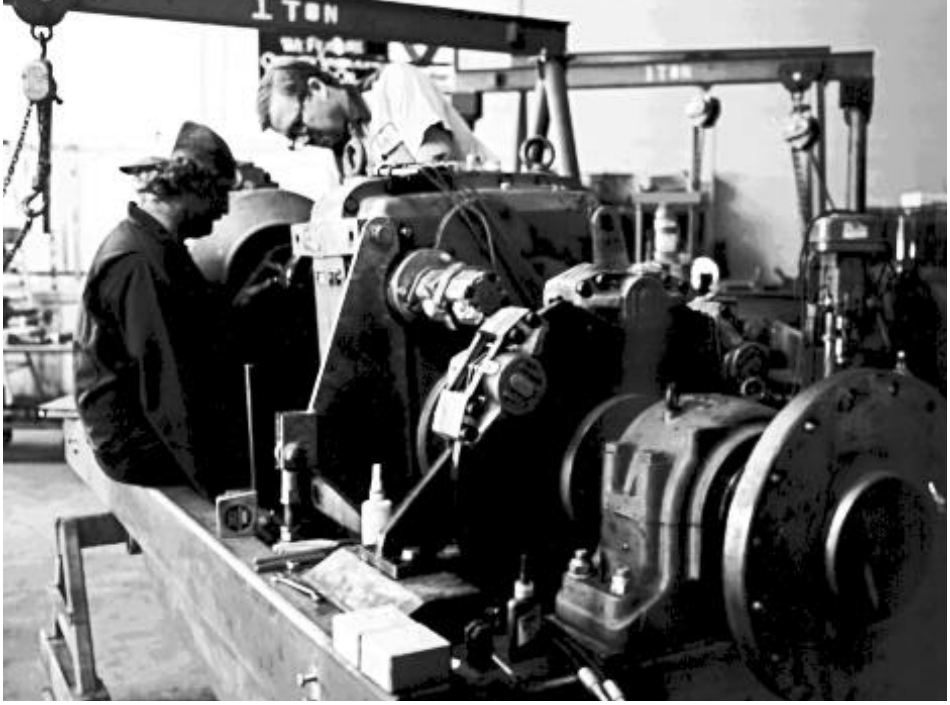
Induced Effects. Money paid to all those involved in the direct and indirect effects (e.g., the motor installer, the vendor, and the wholesale supplier) induces more positive effects in the local economy. These induced effects occur through people's purchases of additional goods and services (e.g., retailers, professional services, and entertainment).

Spending of Energy Dollar Savings

Aside from the multiplier effect generated by investment in energy efficiency improvements, the economic benefits (e.g., increased discretionary income) resulting from the energy dollar savings accrue primarily to members of the local community. In fact, it is the spending of energy dollar savings that can translate into substantial economic benefits, possibly greater in magnitude than the initial investments in energy efficiency improvements. Recent research (see *For More Information*, American Council for an Energy-Efficient Economy) has indicated that spending of energy-related savings accounts for as much as 90% of the resulting positive economic activity.

The Potential of Energy Dollars: Business and Job Growth

Several local and state governments have analyzed actual and projected economic development effects of energy efficiency or alternative energy projects. A sampling of their findings is listed on the next page.



Warren Gretz, NREL

Workers are shown performing mechanical inspection and maintenance on a wind turbine's gearbox and generator. The growth of the nation's wind industry is creating and sustaining thousands of jobs today.

New Solar Venture Addresses Multiple Local Needs

A community's active interest in improving its economic well-being through better use of energy can lead to a receptive environment for location of "clean" technology business ventures. This type of economic development can be combined with other local needs, such as developing new job opportunities for highly skilled workers in diminishing industries.

Jefferson County, Colorado, announced that a $35-million business venture, which will create about 1000 predominantly high-tech jobs, has established production operations in the county. The new venture will produce modular solar power systems used to generate electricity for utility applications. This project is especially attractive because it creates a demand for the types of skills of many workers laid off from the Rocky Flats nuclear weapons manufacturing facility and other defense industry employers in Jefferson County.

The Environmental Services Department, San Jose, California, estimated that $33 million in incremental wages and salaries would be generated from an investment program implementing energy efficiency measures. The investment program consisted of $654,350 from the city, which stimulated an $8.5-million private sector investment in energy efficiency measures. Net employment would increase by 1753 job-years, and local spending would increase by $20.8 million. The initial energy savings was estimated to be $4.3 million.

The Massachusetts Division of Energy Resources reports that the state has realized a 257% job growth in energy efficiency firms, such as energy service companies (see *Financing Local Energy Efficiency Projects,* part of this Cities and Counties fact sheet series), between 1988 and 1992, indicating vigorous business growth.

The Wisconsin Energy Bureau recently found that the use of renewable energy generates about three times more jobs, earnings, and sales output in Wisconsin than the same level of imported fossil fuel use and investment. Given a 75% increase in the state's renewable energy use, the Bureau found that the state would realize more than 62,000 new jobs, $1.2 billion in new wages, and $4.6 billion in new sales for Wisconsin businesses. The state currently imports about 94% of its energy.

The wind energy industry presently supports more than 50 businesses in California; 1200 people are employed directly in these businesses, and another 4300 jobs have been created indirectly, nearly all related to operating, maintaining, and servicing wind turbines.

From just biomass alone, 66,000 jobs are already supported in the United States, a great many in rural areas. By 2010, biomass power could support more than 283,000 U.S. jobs.

These findings represent only a small fraction of the growing body of analysis in the area of local economic development and energy use. Contact the organizations listed in *For More Information* to obtain details regarding additional reports.

Summary

Increasingly, local government decision makers, staff, and business development leaders are recognizing the connection between energy dollars and economic vitality. The spending of energy-related savings can translate into substantial local economic benefits, possibly greater in magnitude than the investment in energy efficiency. But both investment and spending create favorable economic ripple effects. For local governments, this policy approach sounds like solid business. ■

Results: A Municipal Utility Confirms Impacts

The Sacramento Municipal Utility District (SMUD) has established an energy efficiency program with measures designed to offset the need to purchase additional electrical power capacity. Such measures are known as demand-side management (DSM). The adoption of this planning objective for aggressive load management has been actively promoted and was well received by Sacramento ratepayers. With the changes in the economic climate in California and their impact on the Sacramento region, SMUD's DSM activities also contribute to the economic well-being and development of the region. An example is SMUD's Conservation Power Program.

In 1992, SMUD adopted a policy to obtain as much as 650 megawatts of equivalent power capacity from its customers by the year 2000, by installing load management and energy efficiency measures. Thus, the $59-million Conservation Power Program enables the utility to avoid the construction of additional power-generating capacity. This kind of energy substitution has a positive income effect for participants, who can spend energy dollar savings on other items, creating new local and regional demands for goods and services—a "ripple effect." The following positive impacts were presented in a recent California State University report commissioned by SMUD.

SMUD's Conservation Power Program:

- Spent $59 million locally on energy efficiency measures
- Avoided spending $45 million to purchase power from other regions
- Increased regional income by $124 million, achieving an economic multiplier of 2.11
- Created about 880 direct-effect jobs, 250 of which were SMUD jobs
- Added $22 million to the area's wage-earning households.

Additional long-term benefits accrue to the region through lowered overhead or operating costs for participants and, therefore, increased disposable income. The additional long-term benefits occur because the energy efficiency improvements continue saving energy dollars over the life of the efficiency measure, typically a 10- to 20-year period. And these energy dollars are more likely to remain in the local economy, creating an economic multiplier. Like Osage, the city of Sacramento, through its own municipal utility, has proven the positive economic impact that energy efficiency programs can have on local and regional economic development.

Glen Korengold, Sacramento, CA

Sacramento Municipal Utility District (SMUD) workers are shown installing a domestic solar water heating system. Substantial numbers of jobs can be created through the manufacturing and installation of solar heating systems.

For More Information

The American Council for an Energy-Efficient Economy
1001 Connecticut Avenue, NW, Suite 801
Washington, DC 20036
(202) 429-8873
Energy Efficiency and Job Creation: The Employment and Income Benefits from Investing in Energy Conserving Technologies
ACEEE is a nonprofit organization that gathers, evaluates, and provides information to stimulate greater energy efficiency.

"Job Benefits of Expanding Investment in Solar Energy,"
Solar Industry Journal, Fourth Quarter, 1992.
This article presents a cogent assessment of employment potential and a growing solar and energy efficiency industry.

Urban Consortium Energy Task Force
Public Technology, Inc.
1301 Pennsylvania Avenue, NW
Washington, DC 20004
(202) 626-2400
The Hidden Link: Energy and Economic Development, Phases I and II
The UCETF, which works extensively with local governments to document and help share their experiences, represents an excellent information and technical assistance resource.

Economic Renewal Program
Rocky Mountain Institute
1739 Snowmass Creek Road
Snowmass, CO 81654
(970) 927-3851
RMI provides publications, tools, and training seminars to put sustainable development within reach of interested communities.

Cities and Counties Project
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To order copies of fact sheets in the Cities and Counties series, call the Energy Efficiency and Renewable Energy Clearinghouse at (800) 363-3732.

DOE Regional Support Offices

The DOE Office of Energy Efficiency and Renewable Energy reaches out to the states and private industry through a network of regional support offices. Contact your DOE regional support office for information on energy efficiency and renewable energy technologies.

Atlanta DOE Support Office
730 Peachtree Street, NE, Suite 876
Atlanta, GA 30308
(404) 347-2837
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Seattle DOE Support Office
800 Fifth Avenue, Suite 3950
Seattle, WA 98104
(206) 553-1004
(Serves: AK, AZ, CA, HI, ID, NV, OR, WA)

Note: The economic multipliers presented in this paper were provided by Skip Laitner, American Council for an Energy-Efficient Economy. Each community will have economic multipliers for energy and commodities that are specific to that economic region. For examples of other studies of economic multipliers, see The Hidden Link: Energy and Economic Development *series, published by the Urban Consortium Energy Task Force.*

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